FEDERAL SUPPLY CLASS
5935/6150

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ISSUED 2004-04

CUSTODIAN: SAE AE-8/AE-8A

PROCUREMENT SPECIFICATION: MIL-C-7974

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

PLUGS AND CABLE ASSEMBLIES,
EXTERNAL POWER, AIRCRAFT,
230/400 VOLT, 400 HERTZ

AS21378
SHEET 1 OF 7

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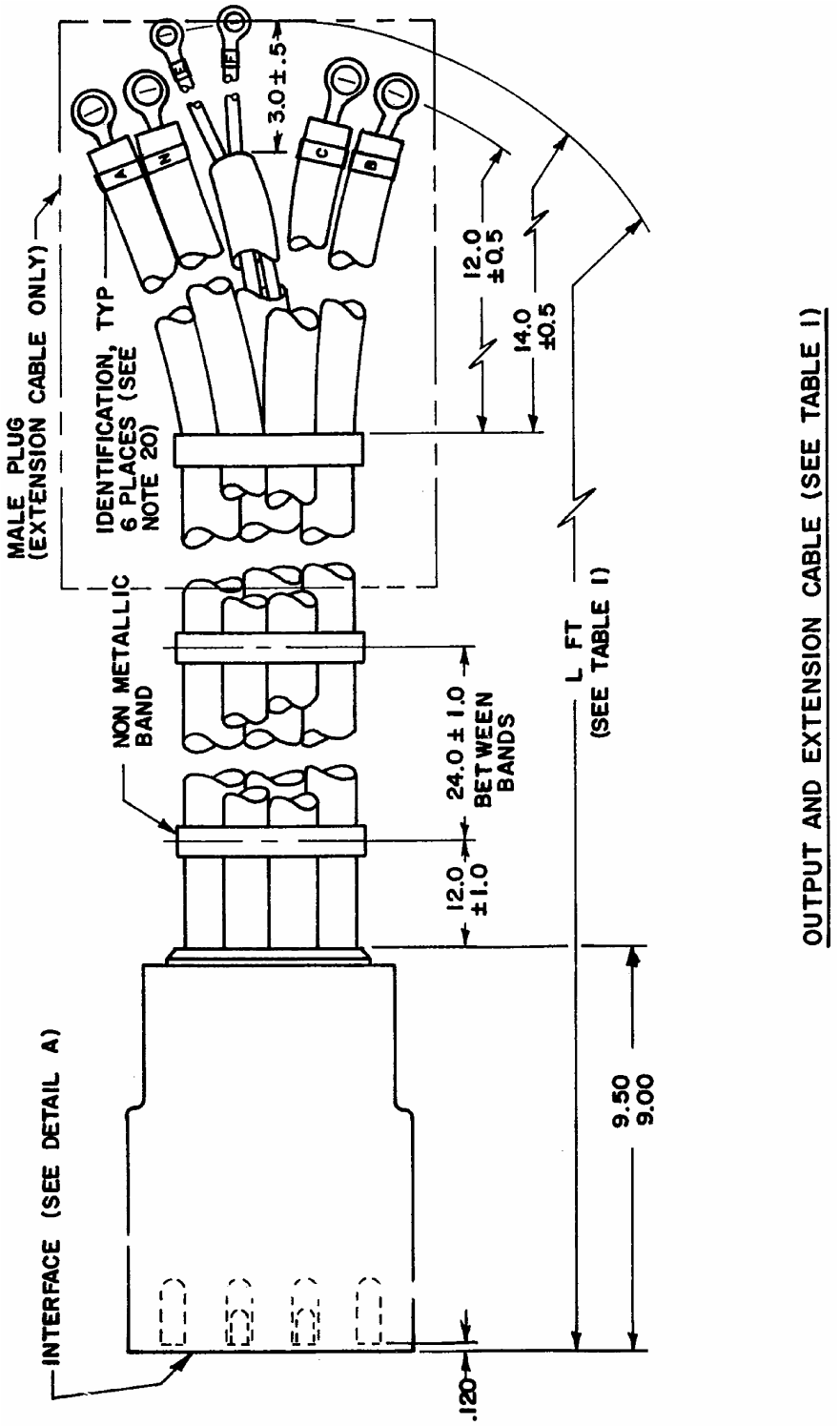

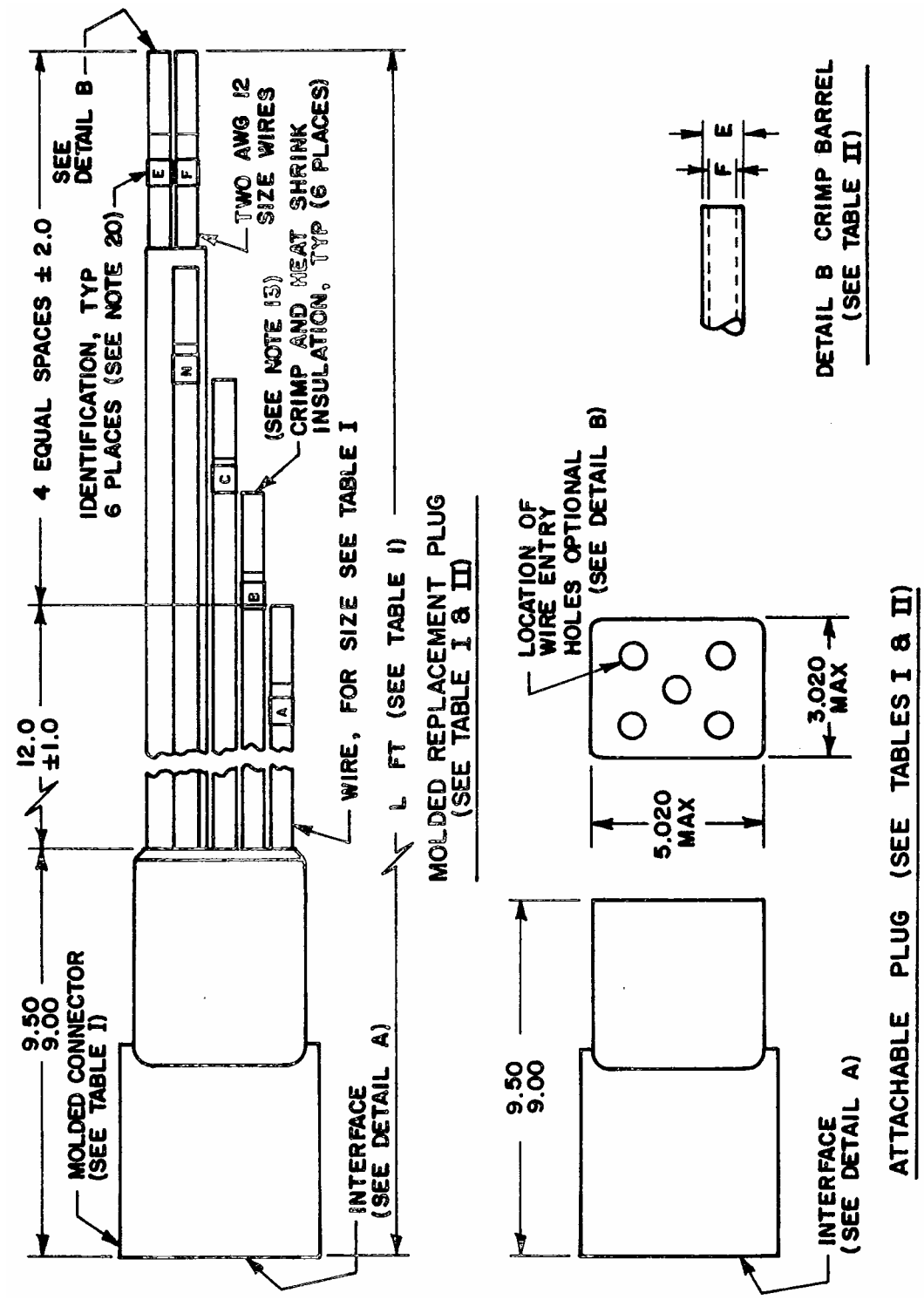
4 EQUAL SPACES ± 2.0
IDENTIFICATION, TYP
6 PLACES (SEE NOTE 20)
SEE DETAIL B
TWO AWG 12 SIZE WIRES
(SEE NOTE 15)
CRIMP AND HEAT SHRINK INSULATION, TYP (6 PLACES)
12.0 ±1.0
WIRE, FOR SIZE SEE TABLE I
L FT (SEE TABLE I)
MOLDED REPLACEMENT PLUG (SEE TABLE I & II)
9.50 9.00
MOLDED CONNECTOR (SEE TABLE I)
INTERFACE (SEE DETAIL A)
LOCATION OF WIRE ENTRY HOLES OPTIONAL (SEE DETAIL B)
5.020 MAX
3.020 MAX
9.50 9.00
INTERFACE (SEE DETAIL A)
ATTACHABLE PLUG (SEE TABLES I & II)
F
E
DETAIL B CRIMP BARREL (SEE TABLE II)

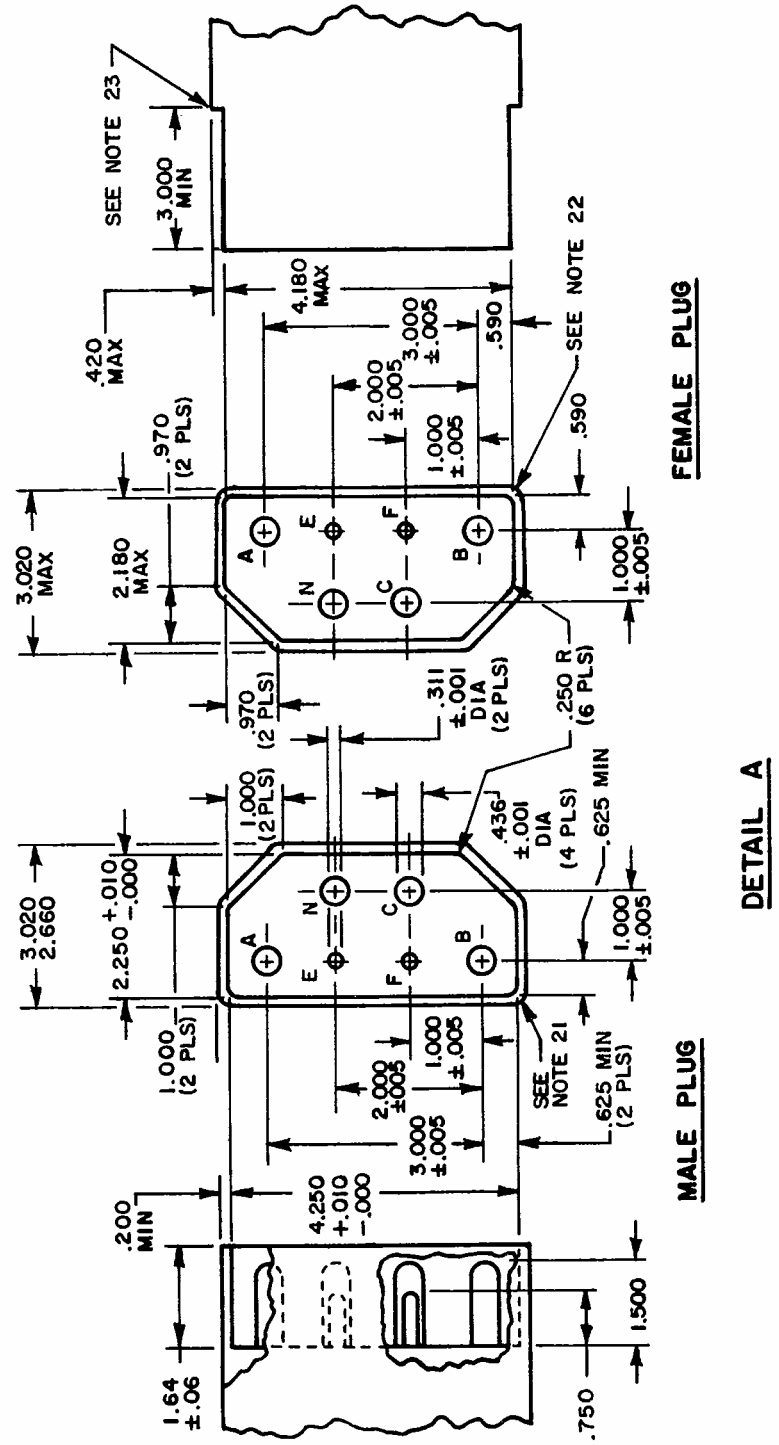
SEE NOTE 23
3.000 MIN
4.180 MAX
.420 MAX
SEE NOTE 22
3.000 ±.005
.590
2.000 ±.005
1.000 ±.005
.970 (2 PLS)
FEMALE PLUG
3.020 MAX
2.180 MAX
A
E
F
B
N
C
1.000 ±.005
.311 ±.001 DIA (2 PLS)
.250 R (6 PLS)
.970 (2 PLS)
1.000 (2 PLS)
.436 ±.001 DIA (4 PLS)
.625 MIN
3.020
2.660
2.250 +.010 -.000
1.000 ±.005
1.000 (2 PLS)
SEE NOTE 21
.625 MIN (2 PLS)
2.000 ±.005
1.000 ±.005
3.000 ±.005
DETAIL A
MALE PLUG
.200 MIN
4.250 +.010 -.000
1.500
1.64 ±.06
.750

TABLE I
CABLES AND PLUGS

PART NO.	A,B,C,N WIRE SIZE	LUG TERMINALS		L FEET ±0.5	PLUG TYPE	ITEM
		WIRES ABC	WIRE N			
MS21378-8	0	MS20659-118	MS20659-135	110	MOLDED FEMALE	OUTPUT CABLE
-12 -15	00	MS20659-120	MS20659-136	25 60	MOLDED FEMALE	OUTPUT CABLE
-21	0	-	-	75	MOLDED MALE & FEMALE	EXTENSION CABLE
-30 -31 -32	0 0 00	SEE TABLE II		- - -	FEMALE MALE FEMALE	ATTACHABLE REPLACEMENT PLUG
-35 -36 MS21378-37	0 0 00			1/ 1/ 1/	FEMALE MALE FEMALE	MOLDED REPLACEMENT PLUG

1/ 42.0 ± 2.0 INCHES

TABLE II
REPLACEMENT PLUG CRIMP BARRELS

WIRE SIZE	E DIA INCH		F DIA INCH	
	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM
0	.578	.558	.458	.438
00	.640	.620	.520	.500
12	.230	.210	.135	.123

NOTES:

1. THE CABLES AND PLUGS SHALL MEET THE DESIGN REQUIREMENTS AND QUALITY ASSURANCE PROVISIONS OF MIL-C-7974, UNLESS OTHERWISE REQUIRED BY THIS DRAWING.
2. MATERIAL: SEE PROCUREMENT SPECIFICATION MIL-C-7974. SEE NOTE 16 FOR FLUID COMPATIBILITY.
3. DIMENSIONS IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCES: DECIMALS ±0.025.
4. THE FEMALE PLUG WHEN MATED WITH THE MS 21379 RECEPTACLE SHALL MEET ALL THE REQUIREMENTS OF THE PROCUREMENT SPECIFICATION. TO EVALUATE THE MALE PLUG TO THE REQUIREMENTS OF THE PROCUREMENT SPECIFICATION, AN UNTESTED FEMALE PLUG SHALL MEET THE REQUIREMENTS OF DIMENSION EXAMINATION, EXAMINATION OF PRODUCT, AND INITIAL MATING FORCES THEN USED AS THE TEST STANDARD FOR THE MALE PLUG.

5. THE LARGE SIZE SOCKETS, PINS AND BARRELS SPECIFIED FOR THE MOLDED REPLACEABLE CABLE AND THE DETACHABLE PLUG, SHALL BE CRIMPED WITH THE MS 25441 TOOL AND RELATED MS 90485 CRIMPING DIES. THE SIZE 12 SOCKETS, PINS, AND BARRELS SHALL BE CRIMPED WITH THE MIL-C-22520/24 HAND CRIMPING TOOL. THE PROCEDURE FOR PERFORMING THE CRIMP SHALL BE AS SPECIFIED IN NAVAIR TECHNICAL MANUAL 01-1A-505 OR USAF TECHNICAL MANUAL (USAF) T.O. 1-1A-14. TO FACILITATE PRODUCTION, AN EQUIVALENT CRIMPING SYSTEM MAY BE APPROVED BY THE QUALIFYING ACTIVITY.

6. ONLY NONCORROSIVE HARDWARE SHALL BE USED IN THE MANUFACTURE OF THE PLUG.

7. WIRES: WIRES CONNECTED TO A, B, C, AND N SOCKETS SHALL BE OF THE SIZE LISTED IN TABLES, AND WIRE CONNECTED TO SOCKETS E AND F SHALL BE AWG NO. 12.

8. QUALIFIED CABLES PER MIL-C-5756 SHALL BE USED.

9. WIRE TERMINATIONS SHALL BE CRIMP TYPE. MOLD OR STAMP WIRE SIZE ON CRIMP (TABLE II).

10. CABLES SHALL BE WIRED FROM FEMALE TO MALE PLUGS OR TERMINALS, WITH CORRESPONDING PIN LETTERS CONNECT A-A, B-B, C-C, N-N, E-E, F-F.

11. CABLE ASSEMBLIES WHICH ARE PROCURED FOR AIR FORCE ORIGINAL APPLICATION SHALL ONLY BE INTEGRALLY MOLDED CABLE ASSEMBLIES.

12. AIR FORCE USE OF ATTACHABLE PLUGS SHALL BE LIMITED TO REPLACEMENT OF ORIGINAL MOLDED ASSEMBLY PLUGS DAMAGED IN SERVICE.

13. REPLACEMENT CONNECTORS MAY BE ATTACHABLE TYPE OR THE MOLDED PLUG KIT TYPE, SUPPLIED WITH CRIMP TERMINALS AND SHRINK INSULATION.

14. THE MOLDED TYPE OR ATTACHABLE MALE PLUGS SHALL INCLUDE A FULL SHROUD TO PROTECT MALE PINS FROM EXPOSURE WHEN PARTIALLY OR FULLY DEMATED FROM A FEMALE PLUG.

15. ATTACHABLE TYPE REPLACEMENT CONNECTOR VOIDS SHALL BE FILLED WITH EP1-BOND 122 COMPOUND, FED SPEC. MMM-A-134 TYPE 1 AFTER TESTING. REF T.O. 1-1A-15.

16. QUALIFICATION TESTS, FLUID IMMERSION TEST - THE FOLLOWING FLUIDS SHALL BE ADDED TO THOSE LISTED IN PARAGRAPH 4.6.3.1 OF MIL-C-7974.

    a. LIQUID COOLANT: MONSANTO COOLANOL 25 BULLETIN O/AA-1, NSN: 6850-00-935-9774.

    b. SOLVENTS: MIL-STD-202 METHOD 215.

    c. HYDRAULIC FLUID: MIL-H-5606.

    FOR THE FLUIDS LISTED HEREIN, IMMERSION TIME SHALL BE 5 MINUTES. REMOVE 24 HOURS PLUS OR MINUS 2 HOURS. THIS CONSTITUTES 1 CYCLE. REPEAT FOR 5 CYCLES. ATTENTION MUST BE GIVEN TO ENSURE COMPATIBILITY BETWEEN THE FLUIDS LISTED ABOVE AND THE FOLLOWING MATERIALS. INSULATION, JACKETING, BUSHINGS AND METAL OR PLATED PARTS. TEST POTENTIAL SHALL BE 2500VDC FOR MIL-C-7974, PARAGRAPH 4.6.7.

17. ACCEPTANCE TESTS (DELIVERABLE ITEMS): VENDOR SHALL PERFORM CONTINUITY TEST AT ONE OHM MAX. ON EACH CONDUCTOR. SAMPLE TESTS: MIL-STD-202 TESTS BETWEEN EACH CONDUCTOR AND EVERY OTHER CONDUCTOR AS FOLLOWS: METHOD 301, DIELECTRIC WITHSTANDING AT 2500 VDC, ONE MA MAX. LEAKAGE; THEN METHOD 302 INSULATION RESISTANCE AT 500 VDC, 100 MEGOHM MIN. AMBIENT: 25±5°C, DRY.

18. DESIGN OF MALE PLUG SHROUD SHALL BE INTEGRALLY MOLDED ONTO THE PLUG.

19. PINS E AND F ARE FOR DEAD CABLE CONTROL AND GENERATION OUTPUT CONTACTOR CONTROL. THE OUTPUT CABLES SHALL USE QUALIFIED MS 20659 TERMINAL LUGS AS SPECIFIED IN MIL-T-7928. THE TERMINAL SIZES SHALL BE AS SPECIFIED IN TABLE I FOR THE LARGE WIRES AND SHALL BE MS 20659-106 FOR THE SIZE 12 WIRES. THE LARGE LUGS SHALL BE CRIMPED WITH THE MS 25441 TOOL AND RELATED MS 90485 CRIMPING DIES. THE SIZE 12 LUG SHALL BE CRIMPED WITH THE MIL-C-22520/24 TOOL. THE PROCEDURE FOR PERFORMING THE CRIMP SHALL BE AS SPECIFIED IN NAVAIR TECHNICAL MANUAL 01-1A-505 OR USAF TECHNICAL MANUAL (USAF) T.O. 1-1A-14.

20. IDENTIFICATION SHALL BE ACCOMPLISHED BY EITHER HOT STAMP MARKING OR INK STAMPED HEAT SHRINK TUBING ON THE WIRE INSULATION.

21. SHAPE OF OUTSIDE PERIMETER OF MALE PLUG IS OPTIONAL, PROVIDED IT FALLS WITHIN THE RANGE OF THE SPECIFIED DIMENSIONS.

22. SHAPE OF OUTSIDE PERIMETER OF FEMALE PLUG BEHIND INTERFACE AREA IS OPTIONAL, PROVIDED IT FALLS WITHIN THE RANGE OF THE SPECIFIED DIMENSIONS.

23. OUTSIDE PERIMETER BEHIND INTERFACE AREA MAY INCREASE GRADUALLY.